M.Sc. DEGREE EXAMINATION,NOVEMBER 2019
II Year III Semester
Electrochemistry

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define – Solvation Number.
2. Compare ion dipole and ion solvent interaction.
3. Define – activity coefficient of an electrolyte.
4. Write a note on electrolytic conductance.
5. Define – Electrical double layer.
6. What are the advantages of stern model?
7. What is Tafel's equation? Write its importance.
8. Define – Zeta potential.
9. Define – Corrosion current and corrosion potential.
10. Write any two techniques to prevention of corrosion.
11. What are the advantages of fuel cell?
12. Compare primary and secondary cells.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Derive Debye – Huckel limiting law. How it's verified by quantitatively?
14. Explain Bjerrum modification of Debye – Huckel equation.
15. Explain the factors influencing ion association.
16. Explain the electro capillary curves.
17. Discuss the mechanism of anodic dissolution of iron.
18. Explain the lead – acid storage battery.
19. Explain the electrode – electrolyte interface.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Write the derivation of enthalpy, free energy and entropy of ion solvent interaction. Explain its validity and modification of Born Model.
21. Derive Debye – Huckel Onsager equation.
22. Explain the Butler – Volmer equation for one step electron transfer.
23. Describe the theories and prevention methods of corrosion.
24. Write note on Dropping calomel electrode and Quinhydrone electrode.

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